

## REMARKS

Claims 1-2 and 4-11 are pending in this application. In this Amendment, claim 3 has been cancelled without prejudice to or disclaimer of the subject matter contained therein. No new matter is contained in the amendments presented herein.

Entry of this Amendment is proper under 37 C.F.R. § 1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issues requiring further search and/or consideration on the part of the Examiner as the Amendment merely clarifies the claimed features of the invention; (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to objections raised in the Final Rejection. Entry of the Amendment is thus respectfully requested.

Claim 3 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly failing to further limit claim 1. Without conceding the propriety of this rejection, Applicants submit that it is moot in view of the cancellation of claim 3. Applicants expressly reserve the right to pursue the subject matter of cancelled claim 3 in one or more continuing applications.

Claims 1-11 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over the combination of Nolte et al. ("Partially sulfonated poly(arylene ether sulfone) – A versatile proton conducting membrane material for modern energy conversion technologies") in view of Helmer-Metzmann et al. (U.S. Patent No. 6,096,856).

Applicants respectfully traverse this rejection.

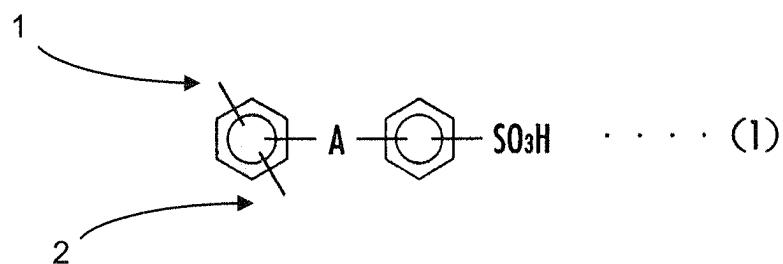
Nolte et al. is cited for allegedly disclosing a fuel cell including a solid proton-conducting ion exchange membrane, poly(arylene ether sulfone)-based polymer electrolyte in which the divalent organic group A is S=O. The fuel cell also includes two current collectors that have an electrode/catalyst that is separated by the ion exchange membrane.

Helmer-Metzmann et al. is cited for disclosing that polyarylene sulfide-sulfonic acid can contain -S- or S=O.

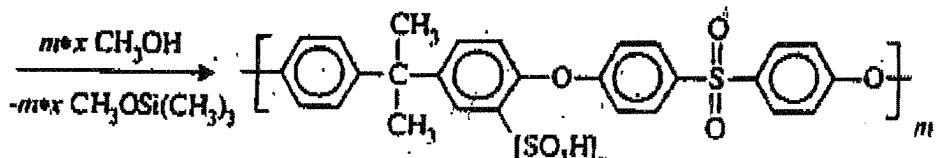
The Office Action takes the position that it would be obvious to use -S- instead of S=O in the fuel cells of the presently-claimed invention based on the combined teachings of Nolte et al. and Helmer-Metzmann et al.

Applicants submit that the presently-claimed invention is fully patentable over Nolte et al. and Helmer-Metzmann et al. for at least the following reasons:

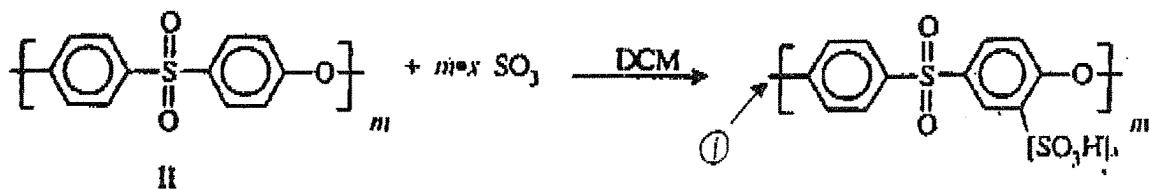
Although the polymer electrolyte fuel cell disclosed in Nolte et al. may include polymer membranes formed from sulfonated polyarylene-based polymers, Nolte et al. fails to disclose or suggest a polymer electrolyte membrane formed by a sulfonated polyarylene as a copolymer consisting of 0.5 to 100% by mol of a first repeating unit represented by the general formula (1), in which **two** connecting subchains are present on the benzene ring:



The formulas of Nolte et al. only indicate that a single connecting subchain for connecting adjacent repeating units is found on both ends of the longitudinal direction of the repeating unit. A single benzene ring having two subchains is not disclosed. For example, on page 215 of Nolte et al., the following reactions are disclosed:



**Sulfonation of PSU Udel® P-1700.**



**Sulfonation of PES Victrex® PES 5200P.**

Therefore, Applicants submit that formula (1) of the present invention is not disclosed or suggested by Nolte et al. Further combination with Helmer-Metzmann et al. does not remedy the deficiencies of Nolte et al. In addition, Applicants submit that formula (2) is also not disclosed or suggested by either of Nolte et al. or Helmer-Metzmann et al.

Accordingly, Applicants submit that the presently-claimed invention is not unpatentable over the combination of Nolte et al. and Helmer-Metzmann et al., and respectfully request that the rejection of claims 1-2 and 4-11 as allegedly being unpatentable over the combination of Nolte et al. and Helmer-Metzmann et al. be withdrawn.

**CONCLUSION**

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of Claims 1-2 and 4-11, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

Applicants believe that no additional fees are required in connection with this Amendment. However, if additional fees are required, the Commissioner is hereby authorized to charge any additional payment, or credit any overpayment, to Deposit Account No. 01-2300, referencing docket number **101175-00037**.

Respectfully submitted,

  
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